(No Model.)

J. J. SANDS.

RETAINING DEVICE FOR BOTTLE STOPPERS.

No. 413,970. Patented Oct. 29, 1889

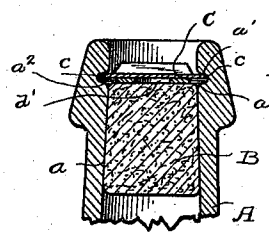


Fig. 11.

Fig. 1.

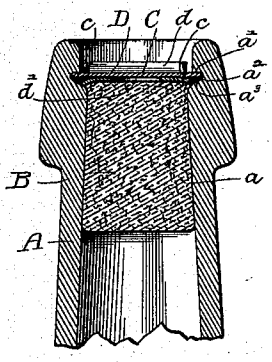


Fig. 3.



Fig. 5.

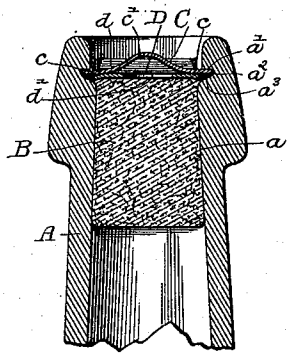


Fig. 4.

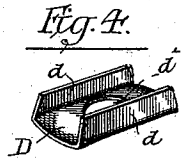


Fig. 2.

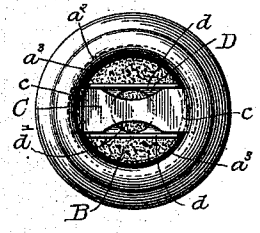


Fig. 7.

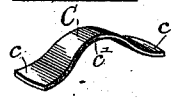


Fig. 6.

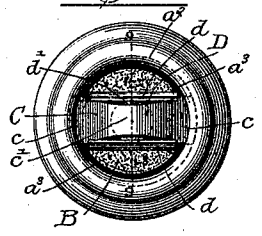


Fig. 8.

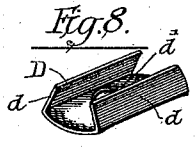


Fig. 9.

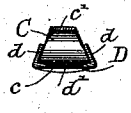
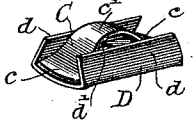


Fig. 10.



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UNITED STATES PATENT OFFICE.

JOSIAS J. SANDS, OF MERTON, WISCONSIN.

RETAINING DEVICE FOR BOTTLE-STOPPERS.

SPECIFICATION forming part of Letters Patent No. 413,970, dated October 29, 1889.

Application filed May 13, 1889. Serial No. 310,604. (No model.)

To all whom it may concern:

Be it known that I, JOSIAS J. SANDS, of Merton, in the county of Waukesha and State of Wisconsin, have invented certain new and useful Improvements in Retaining Devices for Bottle-Stoppers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in devices for retaining stoppers in bottles and other vessels; and it consists, primarily, in a cork or stopper holding bar which is engaged with a groove in the orifice to be stopped, and a flanged plate which is interposed between the stopper and the holding-bar and by its rigidity acts to transmit the upward pressure of the stopper to the ends of the holding-bar, so that possibility is avoided of any upward pressure coming on the middle part of the holding-bar, such as would flex the same, and thus disengage its ends from the groove.

In the accompanying drawings, which illustrate several forms in which my invention may be embodied, Figure 1 is a sectional view of a bottle-neck provided with my improved stopper-holding device. Fig. 2 is a plan view of the parts shown in Fig. 1. Fig. 3 is a perspective view of the holding-bar before insertion in the bottle-neck. Fig. 4 is a perspective view of the flanged plate. Fig. 5 is a sectional view of a bottle-neck containing a stopper-holding device generally similar to that shown in Fig. 1 but having an arched holding-bar. Fig. 6 is a plan view of the parts shown in Fig. 5. Fig. 7 is a perspective view of the arched holding-bar removed from the bottle-neck. Fig. 8 is a perspective view of the flanged plate shown in Figs. 5 and 6. Fig. 9 is a cross-section of the holding-bar and flanged plate, taken upon line 9 9 of Fig. 6. Fig. 10 is a perspective view of the holding-bar and flanged plate when placed together in readiness for insertion in the bottle-neck. Fig. 11 is a sectional view showing my invention as applied to a different form of bottle-neck from that illustrated in Fig. 1.

The form of the invention shown in Figs. 1 to 4 will first be described. In said figures, A is the bottle-neck, of which a is the orifice to be stopped. Near the top of the orifice is located an annular shoulder a', which forms the upper wall of an annular groove a^2, the lower wall of which is formed by an inclined or beveled surface a^3. The part of the orifice below the groove a^2 is smaller than that above said groove, as clearly shown in the drawings. While a continuous or annular shoulder a' is usually preferred, short opposite shoulders may be employed in proper position to engage with the ends of the stopper-holding device. B is a cork or stopper inserted in the bottle-neck with its top somewhat below the groove a^2. C is a flexible sheet-metal holding-bar having flat ends c c, adapted to enter the groove a^2 and to hold the stopper from outward movement by engagement with the shoulder a'. The holding-bar C after insertion is flat or straight, as shown in Fig. 1; but before insertion it is bent into curved or arched form, as shown in Fig. 3, so as to shorten it or bring its ends together sufficiently to allow them to pass the shoulder a'. D is a metal bar or plate, which is located beneath the holding-bar, said plate being made of proper length to pass freely through the part of the vessel-orifice above the groove a^2. The said plate is made flat in its central part with parallel side edges, and has upwardly-extending flanges d d, a main purpose of which is to give longitudinal stiffness to the plate. The ends of said flanges d d are flush with the ends of the plate, and are located adjacent to or nearly in contact with the shoulder a' when the plate is dropped into the bottle-neck, so that they serve to center or hold from longitudinal displacement the said plate. Said plate is preferably made of such length and thickness, furthermore, that when inserted above the cork its ends will rest upon the beveled surface a^3 of the bottle-neck and sustain the ends of the flat holding-bar resting on its top surface in position to enter the groove a^2 beneath the shoulder a' in the manner illustrated in Fig. 1. When the bottle-neck is provided with a beveled surface a^3 and said plate D is constructed to engage the same in the manner described, the said plate D acts in the same manner as the supporting-plate described and claimed

in a separate application, Serial No. 310,605, filed simultaneously herewith.

In inserting the parts of the holder made as above described, the cork B is first forced into the orifice *a* until its top is below the groove a^2, the supporting-plate D is then dropped into the neck over the cork with its ends resting upon the beveled surface a^3, and the holding bar C, in bent form, is then placed upon the supporting-plate between the flanges thereof, and afterward pressed downwardly at its middle part, so as to flatten out the bar and expand the ends thereof into engagement with the groove. After the insertion of the parts in this manner upward pressure of the cork against the supporting-plate is transmitted solely to the ends of the holding-bar adjacent to the points at which the same are engaged with the shoulder *a'*, any bending or upward flexure of the supporting-plate being prevented by the flanges *d d* thereof, which give a great degree of rigidity to the same. The holding device thus constructed is removed by pulling outwardly or lifting the central part of the holding-bar, so as to bend the same at its middle and to withdraw its ends from engagement with the groove of the bottle-neck. To enable such upward bending or flexure of the holding-bar to be easily accomplished, I make the same narrower in its middle part than elsewhere, as clearly shown in the drawings, and provide the supporting-plate with a central aperture *d'*. When the parts are thus constructed, a pointed implement may be easily inserted beneath the central part of the holding-bar, and the latter removed either by a direct upward pull or by prying the center of the holding-bar upwardly, with the implement resting on one of the flanges *d* of the supporting-plate as a fulcrum. It will be obvious that when the holding-bar is perfectly flat, as shown in Fig. 1, the presence of the aperture *d'* in the supporting-plate is desirable in order to enable the pointed implement to be easily inserted beneath the center of the holding-bar.

I will next describe the form of the invention shown in Figs. 5 to 10. In these figures the orifice *a* is provided with a beveled surface a^3, and the holding-bar is made of arched form and is similar to the holding-bar illustrated in a prior patent, No. 404,799, dated June 4, 1889. C indicates the said holding-bar, which is provided with flat ends *c*, for engagement with the groove in the bottle-neck, and with a central arch or U-shaped bend *c'*. The supporting-plate D is in this instance constructed generally in the same manner as shown in Figs. 1 to 4 and hereinbefore described, consisting of a flat central part and upturned marginal flanges *d d*. The holding-bar is preferably made originally of the shape shown in Fig. 7, with its flat ends downwardly inclined and its arched portion normally contracted sufficiently to enable the holding-bar to freely enter the bottle-neck above the groove. The ends of the holding-bar are engaged with the groove by pressing downwardly upon the central arched part of the bar when the ends thereof are resting against the supporting-plate, so as to flatten the arched part, and thus lengthen the bar until its ends fully enter the groove.

For convenience in handling and inserting the holder made as last above described, I preferably make the flanges *d d* of the supporting-plate slightly oblique or inwardly inclined, as clearly shown in Figs. 8 and 9, and I also make the arched holding-bar narrower at its middle part than at its ends, and inclined or beveled at its side margins in such manner that when bent into shape to enter the bottle-neck its end portions will fit within the inclined flanges *d d*, as clearly shown in Fig. 9, the engaging-surfaces of the holding-bar and supporting-plate having the general form of a dovetailed tongue and groove. The parts of the holding device thus constructed are placed together by slipping the holding-bar endwise between the flanges of the supporting-plate preparatory to inserting them in the bottle-neck, so that the person inserting the same may handle the two parts as a single piece and drop them together into the bottle-neck, thereby avoiding the waste of time necessary to place the parts separately in the bottle-neck and in proper position with reference to each other. After the supporting-plate and holding-bar are dropped into place over the cork, with the ends of the supporting-plate resting upon the beveled surface a^3, the holding-bar can be easily and quickly engaged with the groove by pressing downwardly upon the central or arched part of the bar by a suitable tool or implement. Commonly the arched part of the bar will be so proportioned in height to the width of the flanges *d d* that when the bar is expanded the top of the arch will come approximately in line with the upper edges of the said flanges. In inserting the parts thus constructed little care is required in applying pressure to the arched holding-bar for expanding the same, inasmuch as the central part of the bar can be pressed downwardly until the implement used strikes the flanges of the supporting-plate, at which time the ends of the holding-bar will have properly entered the groove.

The central part of the arched holding-bar (shown in Figs. 5 to 10) is made somewhat narrower than the distance between the flanges *d d*, so that a hook or the point of a straight prying-implement may be easily inserted beneath the central part of the bar for extracting the same. In case the holding-bar, when inserted, projects somewhat above the upper edges of said flanges, a hook or pointed implement may be easily inserted beneath the arch even though the central part of the same is made of the full width of the space between the flanges.

As far as the main feature of construction herein described is concerned—namely, the

plate provided with upturned flanges at its edges—said plate may either be arranged to engage the beveled surface of the bottle-neck below the groove in the manner above described or it may be used in connection with a bottle-neck which is of the same diameter above and below the groove. In the latter case the supporting-plate may be sustained at the time of expanding the holding-bar by resting upon the cork so as to sustain the ends of the holding-bar opposite the groove; or a pressing device may be used to force down the said plate with the cork at the time of expanding the holding-bar in the manner illustrated and claimed in another separate application, Serial No. 310,603, also filed simultaneously herewith. A construction of the parts is illustrated in Fig. 11, in which the engagement of the plate D with a beveled shoulder of the bottle-neck is not relied upon to sustain the ends of the holding-bar opposite the groove. In this figure the orifice a of the bottle-neck is made of the same size above and below the groove a^2, and the supporting-plate D is made of proper size or length to freely enter the orifice.

The employment of the flanged plate has the advantages of giving great stiffness and strength to the holding devices to withstand upward pressure from the cork, while by making the ends of the flanges of proper length to engage the inner surface of the bottle-neck the plate is caused to center itself without trouble in inserting it. The particular construction shown in Figs. 5 to 10 is of great advantage, furthermore, inasmuch as it enables the parts to be prepared in readiness for insertion before being applied to the bottle-neck, while at the same time greatly facilitating the operation of inserting the holder at the time of corking the bottle.

It will of course be understood that any suitable tool or implement may be employed for applying pressure to the holding-bar for elongating the same.

The invention is herein illustrated in its application to bottles; but obviously it may be applied to the orifices of other vessels of various kinds.

I claim as my invention—

1. The combination, with the walls of a vessel-orifice having an internal groove, and with a stopper in the orifice, of a flexible metal holding-bar engaged at its ends with said groove and a plate having upturned lateral flanges interposed between the holding-bar and stopper, substantially as described.

2. The combination, with the walls of a vessel-orifice having an internal groove, and with a stopper in the orifice, of a flexible metal holding-bar engaged at its ends with said groove and a plate having upturned lateral flanges interposed between the holding-bar and stopper, said flanges being made of such length as to come into contact with the inner surface of the orifice, substantially as described.

3. The combination, with the walls of a vessel-orifice having an internal groove, and with a stopper in the orifice, of a flexible metal holding-bar engaged at its ends with said groove and a plate having upturned lateral flanges interposed between the holding-bar and stopper, said flanges being inwardly inclined, and the holding-bar being of arched form and beveled at its sides to fit within said flanges, substantially as described.

4. The combination, with the walls of a vessel-orifice having an internal groove, and with a stopper in the orifice, of a flat flexible metal holding-bar engaged at its ends with said groove, and a flanged plate interposed between the holding-bar and stopper, said plate being apertured to allow the insertion of a lifting-tool beneath the center of the bar, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

JOSIAS J. SANDS.

Witnesses:
C. CLARENCE POOLE,
HARRY COBB KENNEDY.